REMARKS

The specification has been reviewed, and clerical errors of the specification have been amended.

In paragraph 1 of the Action, claims 4-9 were rejected under 35 U.S.C. 112, second paragraph. In paragraph 2 of the Action, claims 1-4 were rejected under 35 U.S.C. 102(b) as being anticipated by O'Dougherty et al. In paragraph 3 of the Action, claims 5-9 were rejected under 35 U.S.C. 103(a) as being unpatentable over O'Dougherty et al. in view of Allington.

In view of the rejections, claims 1, 4, 5 and 7 have been amended to clarify the features of the invention.

In O'Dougherty et al. cited in the Action, in a chemical blending system, a diluents is filled in a tank 12 through a valve 60, and a pump 26 is operated to circulate the liquid through a recirculation line 20 with sensors 34A, 34B. Then, a valve 32 is opened to add to the line 20 a chemical in a tank 28A, while checking an opening time and amount of the valve 32 by a microprocessor 42. The concentration of the mixture is checked by the sensors 34A, 34B, and the desired concentration is obtained and memorized in a memory. In preparing the next mixture, the opening time and the amount of the valve 32 are used.

In claim 1, a pump chamber having a plunger to provide suction and discharge operations is provided, and at least two different liquids are mixed at a predetermined mixing ratio by changing a switching timing of the switch valves, wherein at least two different liquids are sucked into the pump chamber alternately by operation of the plunger and by switching the switch valves to thereby determine an actual mixing ratio of the at least two different liquids mixed together. In O'Dougherty et al., while one liquid is circulating in the link 20, another liquid is added, wherein the concentration of the mixture is checked by the sensors in the line 20.

In claim 1, a mixing ratio error is calculated as a difference between the actual mixing ratio and the predetermined mixing ratio, and the mixing ratio error is stored in a memory. In O'Dougherty et al., the actual mixing ration based on the predetermined mixing ratio is not measured. Thus, the difference between the actual mixing ration and the predetermined mixing ratio is not measured.

In claim 1, the switching timing of the switch valves for the at least two different liquids is corrected based on the stored mixing ratio error in operating the plunger for a next operation to thereby obtain the accurate mixing ratio of the at least two different liquids. In O'Dougherty et al., the desired amount of chemical is directly added based on the value in the memory.

Therefore, the features in claim 1 of the invention are not disclosed or suggested in O'Dougherty et al.

In claim 4, a liquid transfer device includes a pump having a pump chamber with an outlet and an inlet connected to the switch valves, and a plunger slidably situated in the pump chamber for transferring the liquids to the pump chamber alternately through the switch valves to prepare a mixture thereof. In O'Dougherty et al., the pumps are used for circulating the liquid and adding the chemical to the line 20, separately. The pump with the plunger connected to the switch valves of claim 4 is not disclosed or suggested in O'Dougherty et al.

In claim 4, the mixing ratio calculation portion determines an actual mixing ratio of the mixture mixed at the predetermined mixing ratio by the pump, and the mixing ratio error calculation portion calculates a mixing ratio error as a difference between the actual mixing ratio calculated by the mixing ratio calculation portion and the predetermined mixing ratio. In O'Dougherty et al., the actual mixing ratio added based on the predetermined mixing ratio is not calculated, and instead, the desired ratio is obtained by checking the sensors. Thus, the mixing ration calculation portion and the mixing ratio error calculation portion are not used

in O'Dougherty et al. The features in claim 4 are not disclosed or suggested in O'Dougherty et al.

Claim 7 has the pump, the mixing ratio calculation portion and the mixing ratio error calculation portion as explained in claim 4, not disclosed in O'Dougherty et al. Thus, the features of claim 7 are not disclosed or suggested in O'Dougherty et al.

In Allington, liquids in reservoirs 13, 16 are respectively sucked by pumps 12, 15, and thereafter, are mixed together to use for liquid chromatography. The pump as shown in Fig. 2 has a diaphragm to be moved by a cam 78 and a rod 57.

In the invention, one pump is connected to the switch valves to receive different liquids continuously by changing the switch valves. However, in Allington, each of the pumps 12, 15 is connected to each of the reservoirs 13, 16 to separately supply the liquids, and the liquids are mixed at the downstream sides of the pumps.

In the invention, the mixing ratio calculating portion and mixing ratio error calculating portion as explained before are used. However, Allington does not have the mixing ratio calculating portion and mixing ratio error calculating portion. Thus, Allington does not disclose or suggest the features of the invention.

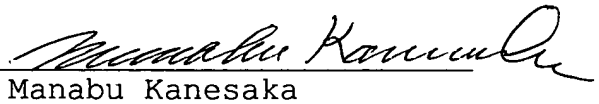
As explained above, the cited references do not disclose or suggest the features of the invention. Even if the cited references are combined, claims of the invention are not obvious from the cited references.

Reconsideration and allowance are earnestly solicited.

A three month extension of time is hereby requested. A check in the amount of $930.00 is attached herewith for the three month extension of time.

Respectfully Submitted,

KANESAKA AND TAKEUCHI

By 
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